EEO 352: Electronics Laboratory I

Fall 2016

2016-2017 Catalog Description:

Electronics Laboratory I provides students with a hardware-based learning environment for hands-on experimentation with computer-based instrumentation and the construction, diagnosis, characterization of a variety of analog and digital electronic circuits. Devices used include resistors, capacitors, diodes, SCR, MOSFET, BJT, opamp, and digital ICs. Students also practice how to communicate effectively through writing reports.

Credit Hours: 3

Course Designation: Required Course

Text Books: Laboratory Manual, available on blackboard.

Prerequisites: Circuits.

Coordinator: Pao-Lo Liu

Goals: In this course, students learn how to: 1) operate electronic instrumentation, 2) analyze characteristics of devices and circuits, 3) read diagram, construct, diagnose, and characterize electronic circuits, 4) prepare technical report.

Course Learning Outcomes: Upon completion of the course, students will have gained:

- ability to apply knowledge of mathematics, science and engineering,
- ability to conduct experiments and analyze data,
- awareness of professional society and ethical responsibility,
- communication skills.

Topics Covered:

Activity 1.	Introduction to Electronics Laboratory
Activity 2.	RC Filters and Diodes
Activity 3.	DC Power Supply
Activity 4.	Inverters and Clock Signal Generation
Activity 5.	Digital Circuits
Activity 6.	Operational Amplifier
Activity 7.	Field-Effect Transistor Amplifier

Activity 8.	Bipolar Junction Transistor Amplifier
Activity 9.	Timing Circuit and Silicon Controlled Rectifier
Activity 10.	Exams

Class/laboratory Schedule: 1 online lecture per experiment – students will spend additional time to conduct the experiment.

Student Outcomes	**% contribution***
❑x (a) an ability to apply knowledge of mathematics, science and engineering	5
❑x (b1) an ability to design and conduct experiments	50
❑x (b2) an ability to analyze and interpret data	15
❑ (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
❑ (d) an ability to function on multi-disciplinary teams	
❑ (e) an ability to identify, formulate, and solve engineering problems	
❑x (f) an understanding of professional and ethical responsibility	10
❑x (g) an ability to communicate effectively	20
❑ (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
❑ (i) a recognition of the need for, and an ability to engage in life-long learning	
❑ (j) a knowledge of contemporary issues	
❑ (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	
❑ Any other outcomes and assessments?	

* Assume that the total contribution of any course will be 100%. Use the right hand column to indicate the approximate percent that the left hand columns contribute to the overall course.

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